

Remarks

The various parts of the Office Action (and other matters, if any) are discussed below under appropriate headings.

Allowable Subject Matter

The allowance or indicated allowability of claims 4-10, 12-17, 27, 30-34, 35, 36, 51, 52, 55 and 56 is noted with appreciation.

Claim Rejections - 35 USC § 101

Claims 1, 28, 30 and 35 have been amended and claim 52 has been cancelled in order to render the rejection moot.

Claim Rejections - 35 USC § 112

The rejection is moot in view of the cancellation of claim 52.

Claim Rejections - 35 USC § 102

According to the Office Action, claim 1 and other claims allegedly are anticipated by US 5,825,188 (Montgomery). This, however, is not the case for at least the following reasons.

Claim 1 is directed to a method of analysing results from an electromagnetic survey of an area. The method is based on combining electric and magnetic field data to obtain combined results data. A significant aspect of the combining is in use of vertical gradients in the electric field data.

Montgomery is fundamentally different both in terms of overall context and in terms of the specific claim features.

Montgomery is based on the direct injection of electric current into a groundwater target (column 2, line 45). Electric current flows through the groundwater target giving rise to electric and magnetic fields at the earth's surface (this is the basic consequence of Ampere's law). The fields are measured using an array of detectors laid out across the earth's surface (represented as crosses in Figure 1). By observing horizontal variations in electric and magnetic fields at the surface of the earth, the direction of the subterranean current flow, and hence ground water, can be determined (e.g., see column 3, lines 60 to 67).

In contrast to the method of claim 1, Montgomery makes no use or mention of vertical gradients in the electric field.

Thus, Montgomery does not disclose at least the feature of "determining a vertical gradient in the electric field data", as recited in claim 1.

The electric field measurements in Montgomery consist of the magnitude and direction of horizontal field components (column 3, lines 55 to 57). Montgomery has not been found to include any disclosure of vertical gradients in electric field data. Indeed, the apparatus Montgomery describes is not capable of measuring such gradients.

In relation to the "vertical gradients" feature of claim 1, the Office Action refers to the paragraph at column 10, line 24 of Montgomery. This paragraph has nothing to do with vertical gradients. The gradients referred to in Montgomery are horizontal gradients, i.e. gradients revealed in contour maps from the horizontal array of surface receivers (the "site data"). See, for example, column 10, lines 33 to 42, and the following text. This is also clear from the phrase "crossed electric and magnetic field gradients" at column 10, line 49. Only horizontal gradients can "cross" one another.

Because Montgomery does not determine any vertical gradients in the electric field data, Montgomery also does not disclose "combining the vertical gradient in the electric field data with the magnetic field data to generate combined response data", as also recited in claim 1.

Claim 1 is therefore not anticipated by Montgomery. Moreover, Montgomery does not disclose, or even hint towards, the above-noted missing features, and describes in any event a fundamentally different kind of surveying. Hence, it would not have been obvious to modify Montgomery in a manner that would give rise to the method of claim 1.

Other Comments

The absence in this reply of any comments on the other contentions set forth in the Office Action should not be construed to be an acquiescence therein. Rather, no comment is needed since the rejections should be withdrawn for at least the foregoing reasons.

Conclusion

In view of the foregoing, request is made for timely issuance of a notice of allowance.

Respectfully submitted,

RENNER, OTTO, BOISSELLE & SKLAR, LLP

/Don W. Bulson/

By _____
Don W. Bulson, Reg. No. 28,192

1621 Euclid Avenue
Nineteenth Floor
Cleveland, Ohio 44115
(216) 621-1113

M:\D\DY0U\PI\P0319\P0319US-R02.doc